

REMARKS

Claims 1-5, 8-20, 27, 28, 31, and 32 are all the claims presently pending in the application.

Applicants gratefully acknowledge that claim 3 is **allowed** and that claim 10 would be **allowable** if rewritten in independent form. However, for the reasons set forth below, Applicants respectfully submit that all of the claims (i.e., claims 1-5, 8-20, 27, 28, 31, and 32) are allowable.

While Applicants believe that claims 1, 2, and 9 are patentable, to speed prosecution, Applicants amend claims 1, 2, and 9 to define more clearly and particularly the features of the present invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Applicants gratefully acknowledge that the Examiner has withdrawn the previous rejections under 35 U.S.C. § 102 and § 103 based on Muramatsu (U.S. Patent No. 6,695,658).

However, the Examiner now rejects claims 1, 2, 4, 5, 8, 9, 11-20, 27, 29, 31, and 32 under 35 U.S.C. § 103(a) as being unpatentable over Muramatsu in view of newly cited Yasui (U.S. Patent No. 6,598,595).

This rejection respectfully is traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention is directed to a blowby gas circulation system for an engine including a crankcase and intake system, in which gas and liquid are effectively separated from a gas-liquid mixture generated in the crankcase and engine oil is prevented from flowing out to an intake system of the engine (e.g., see specification at page 2, lines 7-10).

In an illustrative, non-limiting aspect of the invention, as defined for example by independent claim 1, a blowby gas circulation system for an engine including a crankcase and an intake system. The blowby gas circulation system includes an oil tank provided independently from the engine for supplying engine oil reserved therein to the crankcase, for receiving a gas-liquid mixture generated in the crankcase, and for separating the gas-liquid mixture into a processed gas-liquid mixture and engine oil. The blowby circulation system further includes a breather chamber formed with the crankcase and including an input port connected to the oil tank through an outside passage, for receiving the processed gas-liquid mixture, for separating the processed gas-liquid mixture into blowby gas and engine oil, for sending the blowby gas to the intake system, and for returning the engine oil to the crankcase.

Independent claims 2, 6, and 7 define somewhat similar features.

II. THE PRIOR ART REJECTIONS

Claims 1, 2, 4, 5, 8, 9, 11-20, 27, 29, 31, and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Muramatsu in view of Yasui.

While Applicants believe that claims 1, 2, and 9 are patentable, to speed prosecution, Applicants amend claims 1, 2, and 9 to define more clearly and particularly the features of the present invention.

Applicants submit that Muramatsu and Yasui, either individually or in combination, do not disclose or suggest an input port (i.e., of the breather chamber) connected to the oil tank (which is independent from the engine) through an outside passage, as defined for example, by independent claim 1.

For example, independent claim 1 recites a blowby gas circulation system for an engine including a crankcase and an intake system, including:

an oil tank provided independently from said engine, for supplying engine oil reserved therein to said crankcase, said oil tank receiving a gas-liquid mixture generated in said crankcase, and said oil tank separating said gas-liquid mixture into a processed gas-liquid mixture and engine oil; and
a breather chamber integrally formed with said crankcase and including an input port connected to said oil tank through an outside passage, for receiving said processed gas-liquid mixture, said breather chamber separating said processed gas-liquid mixture into blowby gas and engine oil, said breather chamber sending said blowby gas to said intake system, and said breather chamber returning said engine oil to said crankcase (emphasis added).

Somewhat similarly, independent claim 2 recites a blowby gas circulation system for an engine including a crankcase and an intake system, including:

an oil tank provided independently from said engine, for supplying engine oil reserved therein to said crankcase, said oil tank receiving a first gas-liquid mixture generated in said crankcase, and said oil tank separating said first gas-liquid mixture into a second gas-liquid mixture and engine oil;
a first breather chamber including an input port connected to said oil tank through an outside passage, for receiving said second gas-liquid mixture, said first breather chamber separating said second gas-liquid mixture into a third

*gas-liquid mixture and engine oil, said first breather chamber returning said engine oil directly to said crankcase; and
a second breather chamber for receiving said third gas-liquid mixture, said second breather chamber separating said third gas-liquid mixture into blowby gas and engine oil, said second breather chamber sending said blowby gas to said intake system, and said second breather chamber returning said engine oil to said crankcase (emphasis added).*

Somewhat similarly, independent claim 9 recites a blowby gas circulation system for an engine including a crankcase and an intake system, including:

*an oil tank provided independently from said engine, for supplying engine oil reserved therein to said crankcase, said oil tank receiving a first gas-liquid mixture generated in said crankcase, and said oil tank separating said first gas-liquid mixture into a second gas-liquid mixture and engine oil;
a first breather chamber including an input port connected to said oil tank through an outside passage, for receiving said second gas-liquid mixture, said first breather chamber separating said second gas-liquid mixture into a third gas-liquid mixture and engine oil, said first breather chamber returning said engine oil to said crankcase; and
a second breather chamber for receiving said third gas-liquid mixture, said second breather chamber separating said third gas-liquid mixture into blowby gas and engine oil, said second breather chamber sending said blowby gas to said intake system, and said second breather chamber returning said engine oil to said crankcase,
wherein said crankcase is formed by integrally connecting a first crankcase with a second crankcase,
wherein said first breather chamber is formed by superimposing a first pocket integrally provided with a clutch cover on a second pocket integrally provided with said second crankcase when said clutch cover is connected with said second crankcase (emphasis added).*

That is, according to the claimed invention, the oil tank is provided independently from the engine (e.g., see Figure 4). The independently provided oil tank supplies engine oil to the crankcase. The oil tank receives a first gas-liquid mixture generated in the

crankcase, and separates the first gas-liquid mixture into a second gas-liquid mixture and engine oil.

On the other hand, the breather chamber includes an input port connected to the independently provided oil tank through an outside passage. The breather chamber receives the second gas-liquid mixture, separates the second gas-liquid mixture into a third gas-liquid mixture and engine oil, and returns the engine oil directly to the crankcase.

In comparison, Yasui discloses a breather chamber, integrally formed with the crankcase, for immediately separating a blowby gas leaked from a crankcase.

Yasui does not, however, disclose or suggest integrally forming a breather chamber with the crankcase for secondly separating the blowby gas once it is separated outside of the engine. That is, Yasui does not disclose or suggest integrally forming a breather chamber with the crankcase for subsequently separating the blowby gas after it has been separated outside of the engine, in accordance with the claimed invention.

Indeed, neither Muramatsu nor Yasui discloses or suggest at least “*an oil tank provided independently from said engine, for supplying engine oil reserved therein to said crankcase, said oil tank receiving a gas-liquid mixture generated in said crankcase, and said oil tank separating said gas-liquid mixture into a processed gas-liquid mixture and engine oil; and a breather chamber integrally formed with said crankcase and including an input port connected to said oil tank through an outside passage, for receiving said processed gas-liquid mixture, said breather chamber separating said processed gas-liquid mixture into blowby gas and engine oil*”, as recited in independent claim 1.

Moreover, neither Muramatsu nor Yasui discloses or suggest all of the features of independent claims 2 and 9, for somewhat similar reasons.

Thus, Applicants submit that, even assuming *arguendo* that it would have been obvious to combine Muramatsu and Yasui as alleged, the resulting combination would not disclose or suggest all of the features of the claimed invention, as defined for example, by independent claims 1, 2, and 9.

Thus, Applicants submit that claims 1, 2, 4, 5, 8, 9, 11-20, 27, 29, 31, and 32 would not have been obvious over Muramatsu and Yasui, either individually or in combination. The Examiner respectfully is requested to reconsider and withdraw this rejection.

With respect to the Examiner's "Response to Arguments", Applicants submit the following remarks merely to clarify and respond to the Examiner's statements.

For example, the Examiner asserts that Applicant's traversal position mischaracterizes the disclosure of Muramatsu at column 2, lines 24-25 (see Office action at page 5, third paragraph). Applicants respectfully disagree.

Applicants submit that Muramatsu discloses a reservoir portion 14 having a breather chamber 24. From the breather chamber 24, vapors travel through the recovery conduit 28 to a second breather chamber 29. The second breather chamber 29 includes a drain which allows the liquid lubricant L to return to the crankcase of the engine, while the vapors that travel through the second breather chamber 29 return to the induction system of the engine for combustion within the engine (e.g., see Muramatsu at column 1, lines 61-65 and column 2, lines 9-27).

However, Applicants reiterate that, nevertheless, the first breather chamber 24 of Muramatsu is mounted in an upper portion of the reservoir 14, not integrally formed with the crankcase, which the Examiner acknowledges and addresses in the new ground of rejection (see Office Action at page 3, second paragraph).

Further, in the “Response to Arguments”, the Examiner also alleges that *“Applicant erroneously suggests that the location of the first breather chamber in Muramatsu is disadvantageous because Muramatsu must pump the oil, which is returned to the reservoir from the breather chamber, from the reservoir to the crankcase. It is noted that the instant invention must also pump the oil from the reservoir to the crankcase, utilizing pump 21”* (see Office action at page 5, fourth paragraph).

Applicants respectfully note, however, that the distinction is that the oil from the first breather chamber 24 of Muramatsu is returned to the reservoir (not to the crankcase) such that the oil from the first breather chamber 24 must be pumped from the reservoir to the crankcase. The oil from the first breather chamber 24 of Muramatsu clearly is not returned directly from the first breather chamber to the crankcase, according to the claimed invention.

Applicants submit that, while the exemplary aspects of the present invention pump oil using pump 21 from the reservoir to the crankcase, such oil being pumped by pump 21 is not the oil being returned to the crankcase directly from the first breathing chamber, according to the claimed invention. Thus, the Examiner’s statement regarding the exemplary aspects of pump 21 of the present invention is not believed to be germane to Applicant’s characterization of Muramatsu.

III. FORMAL MATTERS

Applicants note that the Examiner has not yet indicated that the formal drawings filed on July 7, 2003 are accepted and approved.

Therefore, Applicants respectfully reiterate the request that the Examiner accept and approve the Formal Drawings filed on July 7, 2003.

IV. CONCLUSION

In view of the foregoing, Applicants submit that claims 1-5, 8-20, 27, 28, 31, and 32, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.


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The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

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